

## **Pteriomorphia (Mollusca: Bivalvia) from Ullŭng Island, Korea**

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### **ABSTRACT**

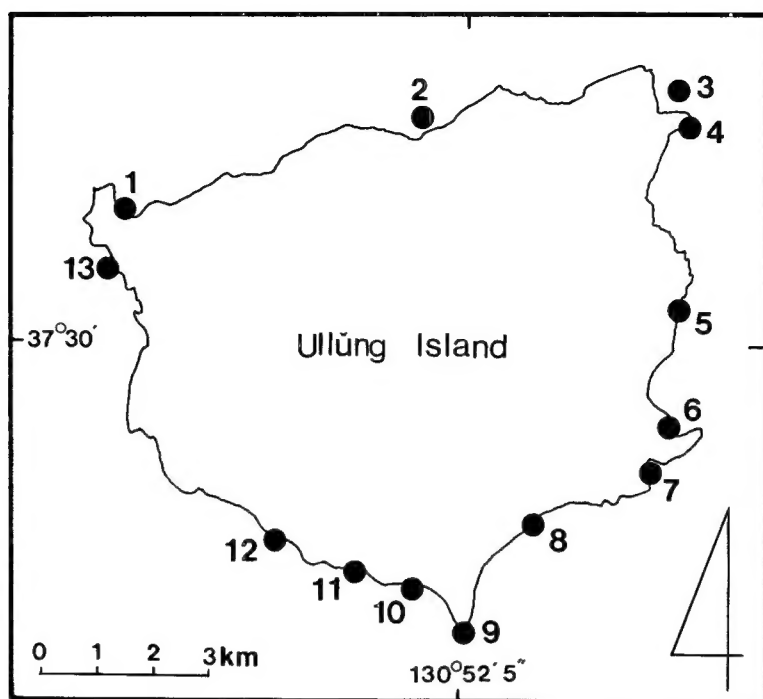
Thirty-three species or subspecies of marine pteriomorphs from Ullŭng Island, Korea are described. All the described species are new to the fauna of this island. Among them, five species, *Modiolus (Modiolus) comptus* Sowerby, 1915, *Gregariella coralliophaga* (Gmelin, 1791), *Musculus (Musculus) laevigatus* (Gray, 1824), *Chlamys (Coralichlamys) jousseaumei* Bavay, 1904, *Spondylus (Spondylus) varius* Sowerby, 1829 are newly recorded in Korean waters. These five species are redescribed.

Key words: Taxonomy, Bivalvia, Pteriomorphia, Ullŭng Island, Korea.

All the taxonomic studies on the marine mollusks from Ullŭng Island were those from gastropods, and there have been no information on the bivalves of this island (see Choe & Yoon, 1990a; 1990b; 1992). We collected the pteriomorphs from Ullŭng Island from June 1989 to August 1992 at thirty-one localities (Fig. 1), and identified thirty-three species or subspecies of nine families of pteriomorphs. Three species of our collection, belonging to the genera *Bentharca*, *Modiolus*, *Spondylus* respectively, remain to be identified, and they are still under study. The classification scheme was based on that of Higo and Goto (1993). All the specimens are deposited in the Department of Biology, Sung Kyun Kwan University, Korea. The collectors were indicated in the "Material examined" section in case the specimens were collected by other than the first author. The species name preceded by an asterisk in the following are new record to Korean fauna.

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**Fig. 1.** Map of Ullung Island showing collecting localities. 1, Taep'ungch'wi; 2, Hyölam; 3, Kwanümdo; 4, Sömmok; 5, Naesujön; 6, Chö-dong; 7, To-dong; 8, Sa-dong; 9, Kadubong; 10, T'onggumi; 11, Namyang; 12, Kuam; 13, T'aeha.

Class Bivalvia 이매패강

Subclass Pteriomorpha Beurlen, 1944 익형아강

Order Arcoidea Stoliczka, 1871 돌조개목

Superfamily Arcoidea Lamarck, 1809 돌조개상과

Family Arcidae Lamarck, 1809 돌조개과

Genus *Arca* Linnaeus, 1758 돌조개속

**1. *Arca boucardi* Jousseaume, 1894** 긴네모돌조개

*Arca boucardi* Jousseaume, 1894, p.41 (cited from Habe, 1981); Lee, 1956, p. 88; Kuroda *et al.*, 1971, p. 518 (in Japanese), p. 326 (in English), pl. 67, figs. 10-12; Kang *et al.*, 1971, p. 71; Kira, 1975, p. 122, pl. 43, fig. 15; Habe, 1977, p. 29; Habe, 1981, p. 31; Okada, 1981, p. 222; Inaba, 1982, p. 34; Okutani & Habe, 1990, pp. 71, 213; Habe & Ito, 1991, p. 108, pl. 35, figs. 5-7; Kira, 1992, p. 110, pl. 42, figs. 15a, b; Bernard *et al.*, 1993, p. 21; Higo & Goto, 1993, p. 548; Kwon *et al.*, 1993, pp. 96, 338, 339, figs. 64-5-1, 2.

*Arca kobeltiana* Pilsbry, 1904, p. 559, pl. 40, figs. 14-19 (cited from Habe, 1981).

*Arca rectangularis* Tokunaga, 1906, p. 61, pl. 3, figs. 23a-c (cited from Habe, 1981).

*Navicula boucardi*: Kuroda, 1930a, p. 23, fig. 32; Shiba, 1934, p. 9.

*Arca bonchardi* (sic): Yoo, 1988, p. 109, pl. 22, figs. 4, 5.

*Arca bouchardi* (sic): Kim & Kwon, 1982, p. 197.

**Type locality.** Japan.

**Material examined.** 1 ind., Kuam, 11 Jul. 1989; 8 inds. (1 ind., right valve), T'onggumi, 12 Jul. 1989; 2 inds., Hyölam, 14 Jul. 1989; 14 inds., Taep'ungch'wi, 15 Jul. 1989; 10 inds. (1 ind., left valve), Kadubong, 28 Nov. 1991; 3 inds., To-dong, 28 Nov. 1991; 11 inds., T'onggumi, 28 Nov. 1991; 10 inds. (1 ind., shells only), Chö-dong, 29 Nov. 1991; 1 ind., Kwanüm-do, 29 Nov. 1991; 9 inds., Naesujön, 7 Aug. 1992; 3 inds., T'aeha, 10 Aug. 1992; 13 inds., Sömmok, 10 Aug. 1992.

**Distribution.** Ullung Isl., Hamnam, Anmyöndo, Wando, Chönnam, Pusan, Taehüksando, Chumunjin, Taech'ön in Korea; Amadaiba-Kannontsukadashi-Maruyamadashi, Shuragane, Wakayama Prefecture, Jogashima, Shikoku, Hokkaido to Kyushu in Japan; Southern and Eastern China Seas, Hainan, in China; Taiwan; Maritime Prov. in Russian Repub.

**Habitat.** Rocks; from intertidal zone to 50 m deep.

## 2. *Arca avellana* Lamarck, 1819 돌조개

*Arca avellana* Lamarck, 1819, p. 38 (cited from Habe, 1981); Habe, 1977, p. 29; Habe, 1981, p. 31; Inaba, 1982, p. 34; Matsukuma, 1984, p. 4, pl. 1, fig. 4; Bernard *et al.*, 1993, p. 21; Higo & Goto, 1993, p. 548.

*Arca ocellata* Reeve, 1844, sp. 102; Kamita & Sato, 1941, p. 2; Lee, 1956, p. 88; Kang *et al.*, 1971, p. 71; Kuroda *et al.*, 1971, pp. 518, 519 (in Japanese), pp. 326, 327 (in English), pl. 67, fig. 9].

*Arca kraussii*: Lischke, 1871, p. 141; Lischke, 1874, p. 107.

*Arca acuminata subnormalis* Pilsbry, 1895, p. 148 (cited from Habe, 1981).

*Arca bicarinata* Sowerby, 1901, p. 211, pl. 22, fig. 14 (non Reeve, 1844; cited from Habe, 1981).

*Navicula avellana*: Kuroda, 1930a, p. 23.

*Navicula ocellata*: Kuroda, 1930a, p. 23.

*Navicula arabica*: Kuroda, 1930a, p. 22.

*Arca arabica*: Lee, 1956, p. 88; Kang *et al.*, 1971, p. 71; Kira, 1975, p. 121, pl. 43, fig. 7; Okada, 1981, p. 222; Kim & Kim, 1984, p. 196; Kim & Kim, 1986, p. 321; Okutani & Habe, 1990, pp. 71, 260; Kira, 1992, p. 109, pl. 42, fig. 7.

**Type locality.** Unknown.

**Material examined.** 1 ind., Sömmok, 16 Jun. 1989; 1 ind., Chö-dong, 29 Nov. 1991.

**Distribution.** Ullung Isl., Ch'ujado, Taesambudo, Sangbaekdo, Inch'ön in Korea; Honshu to Kyushu, Wakayama Prefecture, Sagami Bay, Shikoku, Seto Inland Sea, Oga Penin. in Japan; Widely distributed in the Indo-Western Pacific.

**Habitat.** Rocks; from intertidal zone to 80 m deep.

Genus *Barbatia* Gray, 1842 방주조개속 (신칭)

## 3. *Barbatia (Ustularca) stearnsi* (Pilsbry, 1859) 꼬마돌조개 (신칭)

*Arca stearnsi* Pilsbry, 1895, p. 148, pl. 3, figs. 8-10 (cited from Habe, 1981).

*Barbatia (Ustularca) stearnsi*: Kuroda *et al.*, 1971, p. 522 (in Japanese), p. 329 (in English), pl. 67, figs. 19, 20; Habe, 1975, p. 164, pl. 49, fig. 16; Habe, 1977, p. 31; Habe, 1981, p. 32; Inaba, 1982, p. 34; Habe, 1982, p. 111, pl. 49, fig. 16.

*Barbatia (Ustularca) stearnsii* (sic): Matsukuma, 1984, p. 5; Kim & Kim, 1986, p. 322; Higo &

Goto, 1993, p. 549.

*Barbatia stearnsi*: Okutani & Habe, 1990, pp. 72, 248; Bernard *et al.*, 1993, p. 21.

**Type locality.** Nemoto, Boso Penin., Honshu in Japan.

**Material examined.** 1 ind. (shells only), Taep'ungch'wi, 15 Jul. 1989.

**Distribution.** Ullung Is., Ch'ujado in Korea; Seto Inland Sea, Amami, Honshu to Kyushu, Wakayama Prefecture, Kamekisho, Najima, Jogashima, Sagami Bay, Shikoku, Boso Penin., Oga Penin. in Japan; Southern China Sea in China; Taiwan; Southeast Asia; Majuro in Western Pacific.

**Habitat.** Rocks; from intertidal zone to 85 m deep.

Genus *Acar* Gray, 1857 바늘돌조개속(신칭)

#### 4. *Acar plicatum* Dillwyn, 1817 주름돌조개

*Acar plicatum* Dillwyn, 1817, p. 227 (cited from Habe, 1981); Kuroda *et al.*, 1971, p. 523 (in Japanese), p. 330 (in English), pl. 67, fig. 17; Kira, 1975, p. 121, pl. 43, fig. 6; Habe, 1981, p. 33; Okada, 1981, p. 223; Okutani & Habe, 1990, pp. 70, 212; Higo & Goto, 1993, p. 550.

*Barbatia* (*Acar*) *reticulata*: Kuroda, 1930a, p. 25, fig. 34.

*Acar plicat* (sic): Lee, 1956, p. 88.

*Arca plicata*: (sic) Kang *et al.*, 1971, p. 71.

*Acar plicata*: Habe, 1977, p. 32, pl. 5, figs. 13, 14; Matsukuma, 1984, p. 4, pl. 1, fig. 5; Kira, 1992, p. 109, pl. 42, fig. 6; Bernard *et al.*, 1993, p. 22.

**Type locality.** Red Sea.

**Material examined.** 1 ind., Taep'ungch'wi, 15 Jul. 1989.

**Distribution.** Ullung Isl., Chejudo in Korea; Wakayama Prefecture, Honshu to Kyushu, Amadaiba-Kannontsukadashi-Maruyamadashi, Noto Penin., Shikoku in Japan; Southern and Eastern China Sea in China; Philippines; Widely distributed in the Indo-Pacific Region.

**Habitat.** Rocks and gravels; from intertidal zone to 300 m deep.

Genus *Arcopsis* Koenen, 1885 대북털조개속(신칭)

#### 5. *Arcopsis symmetrica* (Reeve, 1844) 흑인대북털조개

*Arca symmetrica* Reeve, 1844, sp. 117 (non fig. 117).

*Striarca* (*Galactella*) *oyamai* Habe, 1953, p. 209, pl. 30, figs. 20, 21; Kira, 1992, p. 109, pl. 42, fig. 5.

*Striarca* (*Galactella*) *symmetrica*: Lee, 1956, p. 88; Kang *et al.*, 1971, p. 71; Kira, 1975, p. 121, pl. 43, fig. 5; Okada, 1981, p. 226; Habe, 1982, p. 110, pl. 49, fig. 1; Kim & Kim, 1986, p. 322; Kwon *et al.*, 1993, pp. 95, 338, figs. 64-2-1, 2.

*Arcopsis symmetrica*: Habe, 1977, p. 41, pl. 7, figs. 11, 12; Habe, 1981, p. 37; Inaba, 1982, p. 35; Matsukuma, 1984, p. 6, pl. 1, fig. 1; Okutani & Habe, 1990, pp. 70, 273; Higo & Goto, 1993, p. 553.

*Striarca symmetrica*: Bernard *et al.*, 1993, p. 26.

**Type locality.** Manila Bay in Philippines.

**Material examined.** 1 ind., Hyölam, 14 Jul. 1989; 2 inds., Taep'ungch'wi, 15 Jul. 1989; 1 ind., Kwanūmdo, 29 Nov. 1991.

**Distribution.** Ullung Isl., T'ongyöng, Taehüksando, Kömundo, Ch'ujado, Inch'ön in Korea;

Wakayama Prefecture, Seto Inland Sea, Honshu to Kyushu in Japan; Bohai Sea, Southern and Eastern China Seas, Yellow Sea in China; Taiwan; Singapore; Philippines; Australia; Hong Kong; Widely distributed in the Tropic Indo-Pacific Region.

**Habitat.** Rocks, sands, gravels, and mud; from intertidal zone to 50 m deep.

Family Parallelodontidae Dall, 1898 왕복털조개과 (신칭)

Genus *Porterius* Clark, 1925 납작복털조개속 (신칭)

**6. *Porterius dalli* (Smith, 1885) 왕복털조개**

*Arca* (*Macrodon*) *dalli* Smith, 1885, p. 269, pl. 17, figs. 10-10a, b.

*Parallelodon obliquatus* Yokoyama, 1920, p. 170, pl. 18, figs 9-11 (cited from Habe, 1981).

*Cucullaria orientalis* Yokoyama, 1922, p. 191, pl. 17, figs. 8, 9 (cited from Habe, 1981).

*Cucullaria dalli obliquata*: Kuroda, 1930b, p. 27, figs. 41, 42; Shiba, 1934, p. 9.

*Pseudogrammatoden* (sic) *dalli*: Lee, 1956, p. 88; Kang et al., 1971, p. 71.

*Porterius dalli*: Kuroda et al., 1971, p. 526 (in Japanese), p. 332 (in English), pl. 117, fig. 12]; Habe, 1977, p. 43, pl. 5, fig. 22; Habe, 1981, p. 39; Inaba, 1982, p. 36; Okutani & Habe, 1990, pp. 72, 218; Habe & Ito, 1991, p. 108, pl. 35, figs. 3, 4; Bernard et al., 1993, p. 27; Higo & Goto, 1993, p. 554; Kwon et al., 1993, pp. 95, 338, fig. 64-4.

*Pseudogrammatodon dalli*: Kira, 1975, p. 122, pl. 43, fig. 10; Okada, 1981, p. 224; Yoo, 1988, p. 109, pl. 22, fig. 3; Kira, 1992, p. 109, pl. 42, fig. 10.

**Type locality.** Off Kobe in Japan.

**Material examined.** 3 inds. (1 ind., right valve), Kuam, 11 Jul. 1989; 5 inds. (1 ind., shells only), T'onggumi, 12 Jul. 1989; 1 ind., Hyölam, 14 Jul. 1989; 6 inds. (3 inds., empty), Sömmok, 16 Jul. 1989; 4 inds., T'onggumi, 25 Nov. 1991; 6 inds. (1 ind., right valve), T'onggumi, 26 Nov. 1991; 4 inds., Kadubong, 28 Nov. 1991; 9 inds., Naesujön, 7 Aug. 1992; 6 inds., T'onggumi, 8 Aug. 1992; 1 ind., T'aeha, 10 Aug. 1992; 2 inds., Sömmok, 10 Aug. 1992.

**Distribution.** Ullung Isl., Ch'ujado, Chumunjin in Korea; Wakayama Prefecture, Honshu to Southern Hokkaido, Shikoku, Kyushu, Oga Penin., Jogashima, Kamekisho, Kii, Amadaiba-Kannontsukadashi-Maruyamadashi, Seto Inland Sea in Japan; Yellow Sea in China; Bering Sea.

**Habitat.** Rocks, stones, sands, and mud; from lower tide marks to 300 m deep

Family Glycymerididae Newton, 1922 밤색무늬조개과

Genus *Glycymeris* Da Costa, 1778 밤색무늬조개속 (신칭)

**7. *Glycymeris* (*Glycymeris*) *aspersa* (A. Adams & Reeve, 1848) 밤색무늬조개**

*Pectunculus aspersus* A. Adams & Reeve, 1848, p. 76, pl. 22, fig. 8.

*Pectunculus vestitus* Dunker, 1877, p. 72; Dunker, 1882, p. 236, pl. 16, figs. 7, 8.

*Pectunculus fulguratus* Dunker, 1877, p. 72; Dunker, 1882, p. 236, pl. 14, figs. 18, 19.

*Glycymeris vestita*: Lee, 1956, p. 88; Kang et al., 1971, p. 71; Kira, 1975, p. 126, pl. 45, fig. 11; Habe, 1981, p. 40; Inaba, 1982, p. 36; Yoo, 1988, p. 115, pl. 24, figs. 3, 4; Okutani & Habe, 1990, pp. 75, 230; Kira, 1992, p. 113, pl. 44, fig. 11; Kwon et al., 1993, pp. 98, 341, figs. 65-2-1, 2.

*Glycymeris* (*Glycymeris*) *vestita*: Habe, 1977, p. 45.

*Glycymeris* (*Veletuceta*) *vestita*: Okada, 1981, p. 227.

*Glycymeris (Veletuceta) fulgurata*: Kira, 1992, p. 113, pl. 44, fig. 9.

*Glycymeris (Glycymeris) aspersa*: Higo & Goto, 1993, p. 555.

*Glycymeris aspersa*: Bernard *et al.*, 1993, p. 28.

**Type locality.** Sooloo Archipelago in Philippines.

**Material examined.** 1 ind., Kuam, 11 Jul. 1989; 3 inds., T'onggumi, 12 Jul. 1989; 1 ind., Sömmok, 16 Jul. 1989.

**Distribution.** Ullüng Isl., Chumunjin in Korea; Seto Inland Sea, Wakayama Prefecture, Honshu to Kyushu, Hokkaido, Oga Penin. in Japan; Southern China Sea in China; Philippines.

**Habitat.** Sands and mud; from 5 m to 200 m deep.

Order Mytiloida Férussac, 1822 **홍합목**

Superfamily Mytiloidea Rafinesque, 1815 **홍합상과**

Family Mytilidae Rafinesque, 1815 **홍합과**

Genus *Mytilus* Linnaeus, 1758 **홍합속(신칭)**

#### **8. *Mytilus edulis* Linnaeus, 1758 진주담치**

*Mytilus edulis* Linnaeus, 1758, p. 705 (cited from Habe, 1981); Reeve, 1858, sp. 33; Lee, 1956, p. 89; Kang *et al.*, 1971, p. 72; Kuroda *et al.*, 1971, p. 542 (in Japanese), p. 343 (in English), pl. 72, figs. 1, 2; Kira, 1975, p. 129, pl. 46, fig. 19; Habe, 1977, p. 51, pl. 10, figs. 8, 9; Habe, 1981, p. 44; Okada, 1981, p. 232; Inaba, 1982, p. 37; Kim *et al.*, 1983, p. 88; Kim & Kim, 1984, p. 197; Kim & Kim, 1986, p. 322; Kim & Shin, 1986, p. 34; Kim & Yoon, 1985, p. 38; Yoo, 1988, p. 113, pl. 23, figs. 9, 10; Okutani & Habe, 1990, pp. 78, 273; Habe & Ito, 1991, p. 111, pl. 36, fig. 3; Kira, 1992, p. 116, pl. 45, figs. 19; Bernard *et al.*, 1993, p. 30; Higo & Goto, 1993, p. 558; Kwon *et al.*, 1993, pp. 100, 343, 344, figs. 66-6-1, 2, 3.

*Mytilus galloprovincialis* Lamarck, 1819, p. 126 (cited from Habe, 1981).

*Mytilus (Mytilus) edulis*: Kuroda, 1932c, p. 126, fig. 137.

**Type locality.** Europe.

**Material examined.** 1 ind., Naesujön, 13 Jul. 1989; 1 ind., Hyölam, 14 Jul. 1989; 1 ind., Sömmok, 16 Jul. 1989; 2 inds., To-dong, 27 Nov. 1991; 2 inds., Naesujön, 7 Aug. 1992; 3 inds., T'onggumi, 8 Aug. 1992.

**Distribution.** Ullüng Isl., Ch'ujado, Aninjin, Sangbaekdo, Hujin, Tolsando, Pusan, Masan, Pijin, Muan in Korea; Wakayama Prefecture, Sajima, Hayama, Kamekisho-Ohne, Nagaoka, Southern Hokkaido, Seto Inland Sea, Honshu, Shikoku in Japan; Hong Kong; Kuriles in Russian Repub.; Australia.

**Habitat.** Rocks; from intertidal zone to 30 m deep

#### **9. *Mytilus coruscus* Gould, 1861 홍합**

*Mytilus coruscus* Gould, 1861, p. 38 (cited from Habe, 1981); Kang *et al.*, 1971, p. 72; Kuroda *et al.*, 1971, p. 542 (in Japanese), p. 343 (in English), pl. 72, figs. 3, 4; Kim & Rho, 1971, p. 6; Habe, 1977, p. 51; Habe, 1981, p. 44; Okada, 1981, p. 232; Inaba, 1982, p. 37; Kim & Kwon, 1982, p. 197; Lee *et al.*, 1985, p. 97; Kim & Kim, 1986, p. 322; Yoo, 1988, pp. 113, 114, pl. 23, figs. 15, 16; Okutani & Habe, 1990, p. 78, 176; Habe & Ito, 1991, p. 112, pl. 36, fig. 4; Bernard *et al.*, 1993, p. 30; Higo & Goto, 1993, p. 558; Kwon *et al.*, 1993, pp. 100, 344, figs.

66-7-1, 2, 3.

*Mytilus crassitesta* Lischke, 1868, p. 221; Lischke, 1869, p. 151, pl. 11, figs. 1, 2; Dunker, 1882, p. 221; Shiba, 1934, p. 12; Lee, 1956, p. 89.

*Mytilus dunkeri* Lischke, 1869, p. 153, pl. 10, figs. 7, 8.

*Mytilus (Mytilus) crassitesta*: Kuroda, 1932c, p. 128, fig. 138.

*Mytilus corsucus* (sic): Kim, 1973, p. 430.

*Mytilus corscus* (sic): Kira, 1975, p. 129, pl. 46, fig. 20.

*Mytilus coruscum*: Kira, 1992, p. 116, pl. 45, fig. 20.

**Type locality.** Hakodate, the Southernmost of Hokkaido in Japan.

**Material examined.** 1 ind., T'onggumi, 12 Jul. 1989; 3 inds., Hyŏlam, 14 Jul. 1989; 2 inds., Taep'ungch'wi, 15 Jul. 1989; 1 ind., Sŏmmok, 16 Jul. 1989; 8 inds. (2 inds., shells only), T'onggumi, 25 Nov. 1991; 2 inds., To-dong, 27 Nov. 1991; 14 inds. (4 inds., shells only), T'onggumi, 28 Nov. 1991; 4 inds., Naesujŏn, 7 Aug. 1992; 3 inds., T'onggumi, 8 Aug. 1992; 5 inds., Namyang, 8 Aug. 1992; 1 ind., Sŏmmok, 10 Aug. 1992.

**Distribution.** Ullŭng Isl., Chejudo (Sŏgwip'o, Sŏngsanp'o, Mosŭlp'o), Paengnyŏngdo, Yŏsu, Wando, Pangŏjin, Chumunjin, Ch'ujado, T'ongyŏng, Kŏmundo, Taehŭksando in Korea; Wakayama Prefecture, Southern Hokkaido to Kyushu, Honshu, Jogashima, Seto Inland Sea, Shikoku, Oga Penin., Hayama in Japan; Eastern China Sea in China; Alaska in America; Kamchatka, Maritime Prov. in Russian Repub.

**Habitat.** Rocks; from intertidal zone to 30 m deep.

Genus *Septifer* Récluz, 1848 격판담치속 (신칭)

**10. *Septifer (Septifer) bilocularis* (Linnaeus, 1758) 두눈격판담치**

*Mytilus bilocularis* Linnaeus, 1758, p. 1705 (cited from Habe, 1981).

*Mytilus pilosus* Reeve, 1858, p. 35.

*Septifer bilocularis*: Lischke, 1869, p. 156; Lischke, 1871, p. 147; Lee, 1956, p. 89; Kang *et al.*, 1971, p. 72; Habe & Kosuge, 1979, p. 130, pl. 48, figs. 5, 6; Okada, 1981, p. 231; Matsukuma, 1984, p. 7, pl. 1, fig. 16; Okutani & Habe, 1990, pp. 77, 204; Kira, 1992, p. 115, pl. 45, fig. 10; Bernard *et al.*, 1993, p. 31.

*Septifer (Septifer) bilocularis pilosus*: Kuroda, 1932c, p. 124; Kuroda *et al.*, 1971, p. 543 (in Japanese), pp. 343, 344 (in English), pl. 74, figs. 19, 20.

*Septifer bilocularis pilosus*: Kira, 1975, p. 128, pl. 46, fig. 9; Kira, 1982, p. 115, pl. 45, fig. 9.

*Septifer (Septifer) bilocularis*: Habe, 1977, p. 53, pl. 11, figs. 11, 12; Habe, 1981, p. 44; Inaba, 1982, p. 37; Higo & Goto, 1993, p. 559.

**Type locality.** Unknown.

**Material examined.** 1 ind., Chŏ-dong, 29 Nov. 1991 (Scuba); 1 ind., Naesujŏn, 7 Aug. 1992 (Scuba).

**Distribution.** Ullŭng Isl., T'ongyŏng in Korea; Wakayama Prefecture, Sagami Bay, Boso Penin., Noto Penin., Shikoku, Amami, Okinawa, Nagasaki, Honshu to Kyushu, Ryukyu to Honshu in Japan; Southern China Sea in China; Taiwan; Philippines; Australia; Red Sea; Widely distributed in the Indo-Western Pacific Region.

**Habitat.** Rocks; intertidal zone.

**11. *Septifer (Mytilisepta) virgatus* (Wiegmann, 1837) 굽은줄격판담치**

*Tichogonia virgatus* Wiegmann, 1837, p. 49 (cited from Habe, 1981).

*Septifer crassus* Dunker, 1853, p. 86 (cited from Habe, 1981).

*Mytilus crassus*: Reeve, 1857, sp. 25.

*Septifer virgatus*: Dunker, 1882, p. 227; Lischke, 1869, p. 155; Kuroda, 1932c, p. 124; Shiba, 1934, p. 12; Kim *et al.*, 1983, p. 88; Lee *et al.*, 1984, p. 123; Kim & Kim, 1984, p. 197; Kim & Kim, 1986, p. 322; Okutani & Habe, 1990, pp. 77, 274; Bernard *et al.*, 1993, p. 31.

*Septifer (Mytilisepta) virgatus*: Lee, 1956, p. 89; Kang *et al.*, 1971, p. 72; Kuroda *et al.*, 1971, pp. 543, 544 (in Japanese), p. 344 (in English), pl. 74, figs. 14, 15; Kira, 1975, p. 127, pl. 46, fig. 8; Habe, 1977, p. 53, pl. 11, figs. 5, 6; Habe, 1981, p. 45; Okada, 1981, p. 231; Inaba, 1982, p. 37; Kim & Kwon, 1982, p. 197; Kim & Kwon, 1983, p. 323; Yoo, 1988, p. 112, pl. 23, figs. 6, 7; Habe & Ito, 1991, p. 116, pl. 37, figs. 15-17; Kira, 1992, p. 115, pl. 45, fig. 8; Higo & Goto, 1993, p. 559; Kwon *et al.*, 1993, pp. 99, 343, figs. 66-4-1, 2.

*Septifer (Mytilisepta) virgatus* (sic): Kim & Shin, 1986, p. 34.

**Type locality.** Indian Ocean.

**Material examined.** 6 inds., Hyölam, 14 Jul. 1989 (Scuba); 1 ind., Chö-dong, 29 Nov. 1991 (Scuba); 1 ind., Naesujön, 7 Aug. 1992 (Scuba); 1 ind., T'onggumi, 13 Jan. 1993 (Scuba).

**Distribution.** Ullüng Isl., Hamnam, Kangwön, Pusan, Ch'ujado, Chumunjin, Tolsando, Aninjin, Kijang, Wando, Taesambudo, Sangbaekdo, Kömundo, Yokchi, T'ongyöng, Taehüksando, Wölsöng in Korea; Wakayama Prefecture, Okinawa, Seto Inland Sea, Southern Hokkaido to Ryukyu, Shikoku, Honshu in Japan; Eastern China Sea in China; Taiwan; Hong Kong; Australia; Widely distributed Indo-Pacific Region.

**Habitat.** Forming a gregarious mass on rocks; tidal zone.

Genus *Modiolus* Lamarck, 1799 뿔담치속 (신칭)

**12. *Modiolus (Modiolus) modiolus difficilis* (Kuroda & Habe, 1950) 털담치**

*Vosella difficilis* Kuroda & Habe, 1950, p. 30; Lee, 1956, p. 89.

*Modiolus (Modiolus) modiolus difficilis*: Habe, 1977, p. 54, pl. 10, figs. 6, 7; Lee *et al.*, 1985, p. 97; Higo & Goto, 1993, p. 559.

*Modiolus difficilis*: Kang *et al.*, 1971, p. 72; Kira, 1975, p. 129, pl. 46, fig. 21; Kim *et al.*, 1983, p. 89; Kim & Kim, 1986, p. 322; Kira, 1992, p. 116, pl. 45, fig. 21.

*Modiolus modiolus difficilis*: Okada, 1981, p. 229; Kim & Kwon, 1983, p. 323; Kim & Shin, 1986, p. 34; Yoo, 1988, p. 113, pl. 23, figs. 11, 12; Okutani & Habe, 1990, pp. 76, 185; Kwon *et al.*, 1993, pp. 101, 345, figs. 66-10-1, 2.

**Type locality.** Northern Japan.

**Material examined.** 1 ind., Kuam, 11 Jul. 1989; 3 inds., Hyölam, 14 Jul. 1989; 1 ind., T'onggumi, 15 Jul. 1989; 2 inds., Kadubong, 28 Nov. 1992; 5 inds., Naesujön, 7 Aug. 1992; 3 inds., T'onggumi, 8 Aug. 1992; 1 ind., T'aeha, 10 Aug. 1992.

**Distribution.** Ullüng Isl., Kömundo, Ch'ujado, Aninjin, Anmyöndo, Wando, Tolsando, Chumunjin, Togdo in Korea; Tokyo Bay, Oga Penin., Hokkaido, Northern Honshu in Japan; Kuriles, Maritime Prov., Ohotsk in Russian Repub.



**Habitat.** Rocks and mud; low tide marks.

**13. *Modiolus (Modiolus) auriculatus* (Krauss, 1848) 깃털담치**

*Modiola auriculata* Krauss, 1848, p. 20, pl. 2, fig. 4 (cited from Habe, 1981).

*Volsella (Volsella) barbata*: Kuroda, 1932c, p. 131.

*Volsella (Volsella) auriculata*: Kuroda, 1932c, p. 133.

*Modiolus plumescens*: Kang *et al.*, 1971, p. 72.

*Modiolus (Modiolus) auriculatus*: Habe, 1977, p. 54; Habe, 1981, p. 45; Inaba, 1982, p. 37; Higo & Goto, 1993, p. 559.

*Modiolus auriculatus*: Matsukuma, 1984, p. 7, pl. 1, fig. 15; Bernard *et al.*, 1993, p. 31.

**Type locality.** Unknown.

**Material examined.** 5 inds. (3 inds., shells only), Kuam, 11 Jul. 1989; 1 ind., T'onggumi, 12 Jul. 1989; 2 inds., Sŏmmok, 16 Jul. 1989; 1 ind., T'onggumi, 25 Nov. 1991; 1 ind., Kadubong, 28 Nov. 1991.

**Distribution.** Ullŭng Isl., Korea; Kyushu, Shikoku, Amami, Okinawa, Honshu, Boso Penin., Wakayama Prefecture in Japan; Southern and Eastern China Seas; Taiwan; Red Sea; Indo-Pacific Region.

**Habitat.** Rocks and mud; from tidal marks to 25 m deep.

**\*14. *Modiolus (Modiolus) comptus* Sowerby, 1915 수염담치(신칭)[Plate-Figs. 1, 2]**

*Modiola compta* Sowerby, 1915, p. 168, pl. 10, fig. 10 (cited from Habe, 1981).

*Modiolus comptus*: Habe, 1975, p. 167, pl. 50, fig. 17; Habe, 1982, p. 113, pl. 50, fig. 17; Okutani & Habe, 1990, pp. 76, 257, 258; Bernard *et al.*, 1993, p. 32.

*Modiolus (Modiolus) comptus*: Habe, 1977, p. 54; Habe, 1981, p. 46; Inaba, 1982, p. 38; Higo & Goto, 1993, p. 559.

**Type locality.** Shikoku in Japan.

**Material examined.** 1 ind., Hyŏlam, 14 Jul. 1989 (Y.J. Kim).

**Description.** Length 4.7 mm, height 5.4 mm, breadth 4.7 mm. Shell small for family, inflated ovate, thin, not solid and corneous; anterior part narrowly rounded, posterior one extremely turgid. Outer surface whitish yellow in middle part, brown in dorsal and ventral parts; surface sculpture consists of numerous fine concentric radial lines beneath thick brown periostracum. Inner surface nacreous, dyed in white and purplish red. Umbo white, situated at nearly anterior terminal, curved anteriorly. Teeth absent; ligamental area long, narrow and deep.

**Distribution.** Ullŭng Isl., Korea; Wakayama Prefecture, Seto Inland Sea, Ariake Bay, Honshu to Kyushu in Japan; Yellow Sea, Southern and Eastern China Seas, Hainan.

**Habitat.** Sands and mud; from lower tide marks to 20 m deep

Genus *Gregariella* Monterosato, 1883 예쁜이담치속(신칭)

**\*15. *Gregariella coralliophaga* (Gmelin, 1791) 산호예쁜이담치(신칭)[Plate-Figs. 3, 4]**

*Mytilus coralliophagus* Gmelin, 1791, p. 3359 (cited from Habe, 1981).

*Modiolaria divaricata*: Dunker, 1882, p. 225; Lischke, 1871, p. 148.

*Gregariella coralliophaga*: Habe, 1977, p. 56, pl. 11, fig. 13; Habe, 1981, p. 48; Inaba, 1982,

p. 38; Okutani & Habe, 1990, pp. 77, 232; Bernard *et al.*, 1993, p. 34; Higo & Goto, 1993, p. 561.

*Botulina coralliophaga*: Okada, 1981, p. 232; Habe, 1982, p. 113, pl. 50, fig. 15.

**Type locality.** Unknown.

**Material examined.** 1 ind., Kuam, 11 Jul. 1989; 1 ind. (shells only), Naesujön, 13 Jul. 1989; 1 ind. shells only, Hyölam, 14 Jul. 1989; 1 ind., Taep'ungch'wi, 15 Jul. 1989.

**Description.** Length 12.9 mm, height 7.2 mm, and breadth 6.4 mm. Shell small, trigonal ovate, fairly convex, thin and weak; anterior part round; posterior one acuminate and sharply angled. Outer surface yellowish brown, ornamented with weak radial lines and strong growth ones; radial lines strong especially on anterior and posterior parts. Inner surface milky white, nacreous, surrounded by prominent fine knobs along margin. Umbo placed extremely on anterior end, elevated, gently rounded. Teeth absent; ligamental area long, and narrow.

**Distribution.** Ullüng Isl. in Korea; Wakayama Prefecture, Oga Penin., Okinawa to Honshu, Boso Penin., Sagami Bay, Noto Penin., Shikoku, Hainan, Seto Inland Sea, Kyushu, Amami, Okinawa in Japan; Southern and Eastern China Seas, Yellow Sea in China; Taiwan; Widely distributed in the Indo-Pacific Region; Western Pacific.

**Habitat.** Boring coral and limestone; from intertidal zone to 20 m deep.

Genus *Musculus* Röding, 1798 계란담치속(신칭)

**\*16. *Musculus (Musculus) laevigatus* (Gray, 1824) 치마담치(신칭)[Plate-Fig. 7]**

*Musculus (Musculus) laevigatus*: Habe, 1977, p. 59, pl. 11, figs. 3, 4; Higo & Goto, 1993, p. 562.

*Musculus laevigatus*: Kira, 1975, p. 127, pl. 46, fig. 7; Okada, 1981, p. 230; Habe & Ito, 1991, p. 115, pl. 37, fig. 11; Kira, 1992, p. 114, pl. 45, fig. 7.

**Type locality.** Unknown.

**Material examined.** 1 ind., Kadubong, 28 Nov. 1991.

**Description.** Length 8.3 mm, height 6.0 mm, and breadth 5.1 mm. Shell small, trigonal oval, rather inflated, fairly thin, and weak; anterior margin extremely short; posterior one somewhat long; ventral margin straight with weakly indented middle part; margin of shell sculptured by many sawtooth waves. Outer surface pale yellowish brown, anterior and posterior parts with numerous filamentary radial lines except smooth middle part. Inner surface weakly lustrous and nacreous. Umbo placed at anterior end.

**Distribution.** Ullüng Isl. in Korea; Hokkaido, Honshu in Japan; Bering Sea, Kurile, Ohotsk, Maritime Prov., Kamtsaka in Russian Repub.; Alaska in America; Arctic Ocean.

**Habitat.** Mud; from 10m to 500 m deep.

**Remarks.** This species bears many resemblances to *Musculus (Modiolarca) cupreus*. But this species has larger size and the shells are more shifted toward the posterior end and less inflated than those of *Musculus (Modiolarca) cupreus*. The sculpture on the anterior and posterior parts of shell of the present species is not so strong as that of *Musculus (Modiolarca) cupreus*.

**17. *Musculus (Modiolarca) cupreus* (Gould, 1861) 작은계란담치(신칭)**

*Modiolarca cuprea* Gould, 1861, p. 37 (cited from Habe, 1981).

*Modiolaria quadrula* Gould, 1861, p. 38 (cited from Habe, 1981).

*Musculus nanus*: Kuroda, 1933a, p. 137.

*Musculus neglectus* Kuroda, 1941, p. 196 (cited from Habe, 1981).

*Musculus (Modiolaria) neglectus*: Lee, 1958, p. 21, pl. 6, fig. 3 (non fig. 4).

*Musculus (Reynella) cupreus*: Kira, 1975, p. 127, pl. 46, fig. 6; Kira, 1992, p. 114, pl. 45, fig. 6.

*Musculus (Modiolaria) cupreus*: Kuroda *et al.*, 1971, p. 552 (in Japanese), p. 350 (in English), pl. 73, figs. 4, 5; Habe, 1977, p. 59, pl. 11, fig. 14; Habe, 1981, p. 49; Inaba, 1982, p. 39; Higo & Goto, 1993, p. 562.

*Musculus cupreus*: Okutani & Habe, 1990, pp. 77, 230; Bernard *et al.*, 1993, p. 35.

**Type locality.** Kagoshima, Kyushu in Japan.

**Material examined.** 6 inds. (3 inds., shells only), Kuam, 11 Jul. 1989; 1 ind., Taep'ungch'wi, 15 Jul. 1989; 2 inds. (1 ind., shells only), Naesujön, 13 Jul. 1989; 2 inds. (1 ind., shells only), Hyölam, 14 Jul. 1989; 2 inds. (1 ind., shells only), Taep'ungch'wi, 15 Jul. 1989; 3 inds. (shells only), Sömmok, 16 Jul. 1989; 1 ind. (shells only), To-dong, 27 Jul. 1991; 2 inds. (1 ind., shells only), T'onggumi, 28 Jul. 1991; 6 inds. (3 inds., shells only), Kadubong, 28 Jul. 1991.

**Distribution.** Ullung Isl., Korea; Wakayama Prefecture, Jogashima, Kamekisho, Sadoshima, Japan Sea, Amami, Okinawa, Honshu, Shikoku, Kyushu, Shuragane, Najima, Hokkaido, Amadaiba-Kannontsukadashi, Kamekisho-Mosaki in Japan; Southern and Eastern China Seas in China; Taiwan.

**Habitat.** Gravels, mud, rocks, large shells, and among ascidians; from intertidal zone to 100 m deep.

Genus *Lithophaga* Röding, 1798 몽당돌맛조개 속(신칭)

**18. *Lithophaga (Leiosolenus) curtus* (Lischke, 1874) 애기돌맛조개**

*Lithophagus curtus* Lischke, 1874, p. 111, pl. 9, figs. 14-17.

*Lithophaga curta*: Dunker, 1882, p. 226; Okutani & Habe, 1990, pp. 79, 177; Bernard *et al.*, 1993, p. 36.

*Lithophaga (Diberus) curta*: Kuroda, 1933b, p. 144, fig. 159.

*Lithophaga (Leiosolenus) curta*: Kuroda *et al.*, 1971, p. 554 (in Japanese), p. 352 (in English), pl. 74, figs. 12, 13; Kira, 1975, p. 128, pl. 46, fig. 11; Habe, 1977, p. 62, pl. 10, fig. 15; Okada, 1981, p. 233; Inaba, 1982, p. 39; Kim & Kim, 1984, p. 197; Yoo, 1988, p. 112, pl. 23, figs. 1, 2; Kira, 1992, p. 115, pl. 45, fig. 11; Kwon *et al.*, 1993, pp. 99, 342, figs. 66-1, 2, 3.

*Lithophaga (Leiosolenus) curtus*: Habe, 1981, p. 53; Higo & Goto, 1993, p. 564.

**Type locality.** Tokyo Bay in Japan.

**Material examined.** 15 inds., Kuam, 11 Jul. 1989; 3 inds., T'onggumi, 12 Jul. 1989; 10 inds., Hyölam, 14 Jul. 1989; 11 inds., Taep'ungch'wi, 15 Jul. 1989; 6 inds., Sömmok, 16 Jul. 1989; 1 ind., T'onggumi, 25 Nov. 1991; 1 ind., To-dong, 27 Nov. 1991; 11 inds., T'onggumi, 28 Nov. 1991; 3 inds., Kadubong, 28 Nov. 1991; 5 inds., Chö-dong, 29 Nov. 1991; 1 ind., T'onggumi, 25 Nov. 1991; 1 ind., To-dong, 27 Nov. 1991; 1 ind., T'onggumi, 28 Nov. 1991; 1 ind., Kadubong, 28 Nov. 1991; 5 inds., Chö-dong, 29 Nov. 1991; 1 ind., Kwanūmdo, 29 Nov. 1991; 9 inds., Naesujön, 7 Aug. 1992; 2 inds., T'onggumi, 9 Aug. 1992; 4 inds., T'aeha, 10 Aug. 1992.

**Distribution.** Ullung Isl. in Korea; Wakayama Prefecture, Kasagone, Shikoku, Kyushu, Okinawa,

Mutsu Bay, Oga Penin., Seto Inland Sea, Honshu to Ryukyu, Okasawara in Japan; Southern and Eastern China Seas in China; Taiwan; Western Pacific.

**Habitat.** Boring in the hard sand, stone and even the shells of such big bivalves as *Chama*; from intertidal zone to 20 m deep.

Order Pterioidea Newell, 1965 익각목

Suborder Pteriina Newell, 1965 익각아목 (신칭)

Superfamily Pectinoidea Rafinesque, 1815 가리비상과

Family Propeamussiidae Abbott, 1954 가리비과

Genus *Chlamys*, Röding, 1798 큰집가리비속 (신칭)

**19. *Chlamys (Coralichlamys) irregularis* (Sowerby, 1842) 짝귀비단가리비**

*Pecten irregularis* Sowerby, 1842, p. 69, pl. 13, figs. 51, 52 (cited from Habe, 1981); Reeve, 1852, p. 19; Lischke, 1869, p. 170; Lischke, 1871, p. 158; Dunker, 1882, p. 240, pl. 11, figs. 2, 15.

*Chlamys irregularis*: Kuroda, 1932a, p. 90; Kira, 1975, p. 139, pl. 50, fig. 3; Okada, 1981, p. 238; Okutani & Habe, 1990, pp. 90, 241; Kira, 1992, p. 123, pl. 49, fig. 3; Bernard et al., 1993, p. 48; Kwon et al., 1993, pp. 108, 350, figs. 70-7-1, 2, 3.

*Chlamys (Chlamys) irregularis*: Kuroda et al., 1971, pp. 569, 570 (in Japanese), p. 362 (in English), pl. 118, fig. 1.

*Chlamys (Coralichlamys) irregularis*: Habe, 1977, p. 81; Habe, 1981, p. 63; Inaba, 1982, p. 40; Higo & Goto, 1993, p. 573.

**Type locality.** Unknown.

**Material examined.** 6 inds. (1 ind., left valve), Kuam, 11 Jul. 1989; 2 inds., Sömmok, 16 Jul. 1989; 1 ind. (right valve), T'onggumi, 25 Nov. 1991; 1 ind., To-dong, 27 Nov. 1991; 1 ind., Kadubong, 28 Nov. 1991; 1 ind., Chō-dong, 29 Nov. 1991; 1 ind., Kwanūmdo, 29 Nov. 1991.

**Distribution.** Ullūng Isl. in Korea; Seto Inland sea, Okinawa, Wakayama Prefecture, Kamekisho-Mosaki, Oga Penin., Shikoku, Kyushu, Honshu to Ryukyu in Japan; Southern China Sea, Hainan in China; Taiwan; Indonesia; Philippines; Australia; Indian Ocean; Western Pacific Region.

**Habitat.** Rocks, sands, mud, and gravels; from tide marks to 150 m deep.

**\*20. *Chlamys (Coralichlamys) jousseaumei* Bavay, 1904 구름무늬가리비 (신칭) [Plate-figs. 5, 6]**

*Chlamys jousseaumei* Bavay, 1904, p. 203, pl. 6, figs. 9, 10 (cited from Habe, 1981); Kira, 1975, p. 137, pl. 49, fig. 8; Okutani & Habe, 1990, pp. 90, 243; Habe & Ito, 1991, p. 117, pl. 38, fig. 8; Kira, 1992, p. 121, pl. 48, fig. 8.

*Chlamys (Chlamys) jousseaumei*: Kuroda et al., 1971, pp. 570, 571 (in Japanese), p. 363 (in English), pl. 79, figs. 14, 15.

*Chlamys (Coralichlamys) jousseaumei*: Habe, 1977, p. 81; Habe, 1981, p. 64; Higo & Goto, 1993, p. 573.

*Chlamys jousseaumi*: Bernard et al., 1993, p. 48.

**Type locality.** Japan.

**Material examined.** 1 ind., Kuam, 11 Jul. 1989; 1 ind. (right valve), Sömmok, 16 Jul. 1989; 1

ind., T'onggumi, 25 Nov. 1991; 1 ind. (left valve), T'onggumi, 26 Nov. 1991.

**Description.** Length 12.5 mm, height 8.4 mm and breadth 2.4 mm. Shell medium in size, thin and weak; nearly orbicular in shape and a little higher than width, slightly inflated and equivalved except for ears. Outer surface bearing reddish brown blots in light brown background, sculptured with about 35 radial lines and serrated throughout; anterior ear of right valve even larger than posterior one, having very deep byssal sinus bearing 5 teeth-like granules on base, distinctly reticulated with about 20 radial lines and 10 strong growth lines stretching toward margin; byssal sinus of anterior ear of left valve absent, radial and growth lines of posterior ear indistinct and appeared only as many tubercles. Smooth inner surface light reddish and milky; ventral margin rounded, but sculptured sawtooth-like along whole margin. Umbo very sharply prominent and placed at middle of shell anteriorly; resilium lying on inner side of umbo situated at center of ventral ligament.

**Distribution.** Ullŭng Isl. in Korea; Wakayama Prefecture, Boso Penin., Honshu to Kyushu, Jogashima, Oga Penin., Shikoku, Higashi-Ohne, Kamekisho, Minami-Amadaiba, Hokkaido in Japan; Southern China Sea in China; Indonesia.

**Habitat.** Fine sands; from 50 to 600 m deep.

## 21. *Chlamys (Azumapecten) farreri farreri* (Jones & Preston, 1904) 파래가리비

*Pecten farreri* Jones & Preston, 1904, p. 149 (cited from Kuroda *et al.*, 1971).

*Chlamys (Chlamys) farreri* Shiba, 1934, p. 11.

*Chlamys farreri*: Lee, 1956, p. 90; Kang *et al.*, 1971, p. 73; Okada, 1981, p. 238; Kim & Kwon, 1983, p. 323; Kim & Shin, 1986, p. 35; Yoo, 1988, p. 118, pl. 25, figs. 4-7.

*Chlamys (Azumapecten) farreri farreri*: Habe, 1977, p. 82; Lee *et al.*, 1985, p. 97; Higo & Goto, 1993, p. 574.

*Chlamys (Azumapecten) farreri*: Habe, 1981, p. 65; Inaba, 1982, p. 41.

*Chlamys farreri farreri*: Okutani & Habe, 1990, pp. 92, 173; Kwon *et al.*, 1993, pp. 106, 349, figs. 70-3-1, 2, 3, 4.

**Type locality.** Shantung Penin. in China.

**Material examined.** 1 ind., T'onggumi, 25 Nov. 1991; 1 ind., Chŏ-dong, 29 Nov. 1991.

**Distribution.** Ullŭng Isl., Kŏjedo, Namhae, T'ongyŏng, Anmyŏndo, Tolsando, Chinhae, Chejudo, Eastern Sea, Hampyŏng, Sokch'o, Kogunsangundo in Korea; Japan Sea, Kii Penin., Boso Penin., Seto Inland Sea, Wakayama Prefecture, Hokkaido, Kyushu in Japan; Eastern China Sea, Yellow Sea in China; Ohotsk, Maritime Prov. in Russian Repub.

**Habitat.** Sands, rocks; from intertidal zone to 70 m deep.

## 22. *Chlamys (Azumapecten) farreri nipponensis* Kuroda, 1932 비단가리비

*Pecten laetus* Gould, 1861 (non 1850), p. 39 (cited from Kuroda *et al.*, 1971); Lischke, 1869, p. 169, pl. 12, figs. 6, 7; Lischke, 1871, p. 157.

*Chlamys farreri nipponensis* Kuroda, 1932a, p. 91; Kang *et al.*, 1971, p. 73; Kim, 1973, p. 430; Kira, 1975, p. 140, pl. 50, fig. 11; Okutani & Habe, 1990, pp. 92, 172; Habe & Ito, 1991, p. 117, pl. 38, figs. 6, 7; Kira, 1992, p. 124, pl. 49, fig. 11.

*Chlamys farreri akazara* Kuroda, 1932a, p. 92, fig. 105.

*Chlamys farreri* (sic) *nipponensis*: Kamita & Sato, 1941, p. 2.

*Chlamys nipponensis*: Lee, 1956, p. 90.

*Chlamys (Chlamys) farreri nipponensis*: Kuroda *et al.*, 1971, p. 569 (in Japanese), p. 362 (in English), pl. 80, fig. 7.

*Chlamys (Azumapekten) farreri nipponensis*: Habe, 1977, p. 82; Higo & Goto, 1993, p. 574.

**Type locality.** Hakodate, Hokkaido in Japan.

**Material examined.** 1 ind., T'onggumi, 25 Nov. 1991; 1 ind., Naesujön, 7 Aug. 1992; 2 inds., Sömmok, 10 Aug. 1992.

**Distribution.** Ullüng Isl., Paengnyöngdo, Chejudo, Eastern Sea, T'ongyöng, Yösu, Inch'ön, Pusan, Köjedo, Taehüksando, Chumunjin, Wando in Korea; Wakayama Prefecture, Hokkaido to Kyushu, Shuragane, Hayama, Jogashima, Kamekisho-Mosaki, Honshu, Shikoku in Japan; Northern China, Eastern China Sea in China; Maritime Prov. in Russian Repub.

**Habitat.** Rocks, gravels; from tidal marks to 60 m deep.

### 23. *Chlamys (Azumapekten) lemniscata* (Reeve, 1853) 비늘비단가리비(신칭)

*Pecten lemniscata* Reeve, 1853, sp. 170.

*Chlamys (Chlamys) lemniscata*: Kuroda *et al.*, 1971, p. 570 (in Japanese), p. 3639 (in English), pl. 80, figs. 1, 2.

*Chlamys (Coralichlamys) lemniscata*: Habe, 1977, p. 81; Habe, 1981, p. 63.

*Chlamys lemniscata*: Kira, 1975, p. 137, pl. 49, fig. 9; Okutani & Habe, 1990, pp. 90, 283; Kira, 1992, p. 122, pl. 48, fig. 9; Kwon *et al.*, 1993, pp. 108, 350, figs. 70-6-1, 2.

*Chlamys (Azumapekten) lemniscata*: Higo & Goto, 1993, p. 574.

**Type locality.** Unknown.

**Material examined.** 1 ind. (right valve), Kuam, 11 Jul. 1989; 1 ind., Chö-dong, 29 Nov. 1991.

**Distribution.** Ullüng Isl. in Korea; Wakayama Prefecture, Honshu to Kyushu, Jogashima, Amadaiba, Kamekisho, Sagami Bay, Shikoku, Hokkaido, Boso Penin. in Japan; Eastern China Sea in China; Western Pacific Region.

**Habitat.** Sands and rocks; from 30 to 300 m deep.

Family Spondylidae Gray, 1826 국화조개과

Genus *Spondylus* Linnaeus, 1758 국화조개속(신칭)

### \*24. *Spondylus (Spondylus) varius* Sowerby, 1829 접시국화조개(신칭)[Plate-Fig. 8]

*Spondylus varius*: Sowerby, 1847, p. 426; Habe, 1977, p. 93; Okutani & Habe, 1990, pp. 97, 270; Bernard *et al.*, 1993, p. 56.

*Spondylus (Spondylus) varius*: Higo & Goto, 1993, p. 579.

**Type locality.** Polynesia.

**Material examined.** 1 ind., Hyölam, 14 Jul. 1989; 1 ind., To-dong, 27 Nov. 1991.

**Description.** Length 62.7 mm, height 73.0 mm and breadth 36 mm. Shell large, ovate, depressed, inequial, thick and solid. Right valve strongly convex, having characteristic triangular face at umbo. Left valve smaller, a little flatter than right one. Inner surface milky white, surrounded by blackish brown band along wrinkled inner margin. Ligamental area straight; resilifer pits large, black, and situated between a pair of large hinge teeth. Muscle scar placed at center of right part in right valve. No byssus.

**Distribution.** Ullŭng Isl. in Korea; Southern Amami, Okinawa in Japan; Southeast Asia.

**Habitat.** Rocks and dead corals; from intertidal zone to 20 m deep.

**Remarks.** Outer surface is sculptured with radial ribs and usually armed with spines or scales in normal specimen, but hardly to be seen in present specimen because surface is covered with carcareous materials.

## 25. *Spondylus (Spondylus) cruentus* Lischke, 1868 못난이국화조개 (신칭)

*Spondylus cruentus* Lischke, 1868, p. 221; Lischke, 1869, p. 172, pl. 12, figs. 1-5; Dunker, 1882, p. 246; Shiba, 1934, p. 12; Lee, 1956, p. 91; Inaba, 1982, p. 41; Kira, 1992, p. 126, pl. 50, fig. 6.

*Spondylus (Spondylus) barbatus cruentus*: Habe, 1977, p. 93; Higo & Goto, 1993, p. 580.

*Spondylus barbatus cruentus*: Kira, 1975, p. 142, pl. 51, fig. 6; Okutani & Habe, 1990, pp. 96, 234; Kwon *et al.*, 1993, pp. 109, 352, figs. 72-1-1, 2.

*Spondylus (Spondylus) cruentus*: Habe, 1981, p. 71.

**Type locality.** Nagasaki in Japan.

**Material examined.** 1 ind. (left valve), Kuam, 11 Jul. 1989; 1 ind., Taep'ungch'wi, 15 Jul. 1989; 1 ind., Naesujŏn, 7 Aug. 1992; 1 ind., Namyang, 9 Aug. 1992; 2 inds., T'aeha, 10 Aug. 1992; 1 ind., Sŏmmok, 10 Aug. 1992.

**Distribution.** Ullŭng Isl., Pusan, T'ongyŏng, Yŏsu, Chumunjin in Korea; Boso Penin., Wakayama Prefecture, Honshu to Ryukyu Island, Oga Penin., Shikoku, Kyushu, Amami, Okinawa in Japan; Southern and Eastern China Seas in China; Taiwan; Hong Kong.

**Habitat.** Rocks; from intertidal zone to 50 m deep.

## 26. *Spondylus (Spondylus) butleri* Reeve, 1856 가시국화조개

*Spondylus butleri* Reeve, 1856, sp. 14; Habe, 1975, p. 174, pl. 53, fig. 16; Habe, 1977, p. 93; Habe, 1982, p. 118, pl. 53, fig. 16; Okutani & Habe, 1990, pp. 97, 197; Bernard *et al.*, 1993, p. 53; Kwon *et al.*, 1993, pp. 109, 352, figs. 72-2-1, 2.

*Spondylus (Spondylus) butleri*: Habe, 1981, p. 71; Higo & Goto, 1993, p. 580.

**Type locality.** Unknown.

**Material examined.** 2 inds. (1 ind., left valve), Hyŏlam, 14 Jul. 1989.

**Distribution.** Ullŭng Isl., Korea; Boso Penin., Okinawa, Wakayama pref., Honshu in Japan; Southern and Eastern China Seas in China; Taiwan; Western Pacific Region.

**Habitat.** Rocks; from intertidal zone to 30 m deep.

Superfamily Limoidea Rafinesque, 1815 외투조개상과

Family Limidae Rafinesque, 1815 외투조개과

Genus *Limaria* Link, 1807 얇은외투조개속 (신칭)

## 27. *Limaria (Limaria) basilanica* (A. Adams & Reeve, 1848) 외투조개

*Lima basilanica* A. Adams & Reeve, 1848, p. 75, pl. 21, fig. 6.

*Lima (Limaria) basilanica*: Kuroda, 1932b, p. 114, fig. 131.

*Promantellum orientalis*: Lee, 1956, p. 91; Kang *et al.*, 1971, p. 73.

*Limaria (Limaria) basilanica orientalis*: Kuroda *et al.*, 1971, p. 587 (in Japanese), p. 375 (in

English), pl. 118, fig. 2; Lee *et al.*, 1985, p. 97.

*Limaria (Limaria) basilanica*: Habe, 1977, p. 103, pl. 19, figs. 10, 11; Inaba, 1982, p. 42; Higo & Goto, 1993, p. 583.

*Limaria basilanica*: Habe, 1981, p. 78; Okutani & Habe, 1990, pp. 98, 279; Bernard *et al.*, 1993, p. 43.

*Mantellum orientale*: Kira, 1992, p. 128, pl. 52, fig. 2; Okada, 1981, p. 244.

**Type locality.** Basilan Island in Philippines.

**Material examined.** 2 inds. (1 ind., right valve), Kuam, 11 Jul. 1989.

**Distribution.** Ullung Isl., Anmyŏndo, Kadŏkdo in Korea; Okinawa, Wakayama, Boso Penin., Honshu to Ryukyu, Shikoku, Sadoshima, Amami, Okinawa, Hokkaido, Kamekisho-Mosaki, Kyushu in Japan; Southern China Sea in China; Taiwan; Philippines; Southeast Asia; Australia; Indo-Pacific Region.

**Habitat.** Stones; from tide marks to 20 m deep.

## 28. *Limaria (Limaria) orientalis* (A. Adams & Reeve, 1848) 가느줄개가리비

*Lima orientalis* A. Adams & Reeve, 1848, p. 75, pl. 21, fig. 7.

*Limaria orientalis*: Habe, 1981, p. 78.

*Lima hakodatensis* Tokunaga, 1906, p. 64, pl. 3, figs. 27a, b (cited from Kuroda *et al.*, 1971).

*Lima angulata minor* Grabau & King, 1928, p. 168, pl. 3, fig. 22 (cited from Kuroda *et al.*, 1971).

*Limea (Promantellum) orientalis*: Oyama, 1943, p. 29, pl. 2, figs. 4a, b (cited from Kuroda *et al.*, 1971).

*Mantellum hakodatense*: Habe, 1975, p. 175, pl. 54, fig. 7.

*Limaria (Limaria) hakodatensis*: Kuroda *et al.*, 1971, pp. 586, 587 (in Japanese), p. 375 (in English), pl. 83, fig. 13; Habe, 1977, p. 103; Inaba, 1982, p. 42.

*Limaria hakodatense*: Habe, 1982, p. 119, pl. 54, fig. 7; Habe & Ito, 1991, p. 119, pl. 38, fig. 15.

*Limaria hakodatensis*: Kira, 1975, p. 145, pl. 53, fig. 2; Okutani & Habe, 1990, pp. 98, 258; Kwon *et al.*, 1993, pp. 109, 353, figs. 73-2-1, 2.

*Limaria (Limaria) orientalis*: Higo & Goto, 1993, p. 583.

**Type locality.** Philippine Archipelago.

**Material examined.** 1 ind. (left valve), T'onggumi, 26 Nov. 1991; 1 ind. Kwanŭmdo, 29 Nov. 1991.

**Distribution.** Ullung Isl., Korea; Wakayama Prefecture, Jogashima, Amadaiba, Kamekisho, Shuragane, Oga Penin., Japan Sea, Kannontsukadashi, Honshu, Shikoku, Hokkaido to Kyushu in Japan; Northern China Sea in China; Indo-Western Pacific Region.

**Habitat.** Sands; from 5 to 120 m deep.

Superfamily Anomioidea Rafinesque, 1815 잠쟁이상과

Family Anomiidae Rafinesque, 1815 잠쟁이과

Genus *Anomia* Linnaeus, 1758 잠쟁이속(신칭)

## 29. *Anomia chinensis* Philippi, 1849 개굴잠쟁이



*Anomia chinensis* Philippi, 1849, p. 130 (cited from Habe, 1981); Kuroda *et al.*, 1971, pp. 590, 591 (in Japanese), p. 378 (in English), pl. 84, figs. 12-14; Kira, 1975, p. 132, pl. 47, fig. 8; Habe, 1977, p. 97, pl. 18, figs. 3, 4; Habe, 1981, p. 80; Okada, 1981, p. 244; Inaba, 1982, p. 42; Lee *et al.*, 1985, p. 97; Matsukuma *et al.*, 1988, p. 407; Yoo, 1988, p. 119, 120, pl. 26, figs. 4-6; Okutani & Habe, 1990, pp. 100, 242; Habe & Ito, 1991, p. 125, pl. 42, figs. 1, 2; Kira, 1992, p. 118, pl. 46, fig. 8; Bernard *et al.*, 1993, p. 57; Higo & Goto, 1993, p. 585; Kwon *et al.*, 1993, pp. 110, 353, figs. 74-1-1, 2.

*Anomia cytaeum* Gray, 1850, p. 115 (cited from Habe, 1981); Reeve, 1859, p. 10; Kang *et al.*, 1971, p. 74.

*Anomia lischkei* Dautzenberg & Fischer, 1907, p. 210, pl. 5, figs. 8-11 (cited from Habe, 1981); Kuroda, 1932b, p. 119, fig. 121; Shiba, 1934, p. 12; Lee, 1956, p. 91; Kang *et al.*, 1971, p. 73.

*Anomia nipponensis* Yokoyama, 1920, p. 146, pl. 11, fig. 18 (cited from Habe, 1981).

*Anomia nipponensis obsoletocostata* Grabau & King, 1929, p. 165, pl. 2, fig. 16 (cited from Habe, 1981).

*Anomia cuticula* Grabau & King, 1928, p. 166, pl. 2, fig. 17 (cited from Habe, 1981).

**Type locality.** Shanghai in China.

**Material examined.** 1 ind., Kuam, 11 Jul. 1989; 1 ind., T'onggumi, 12 Jul. 1989; 4 inds., Naesujŏn, 7 Aug. 1992; 3 inds., Sŏmmok, 10 Aug. 1992.

**Distribution.** Ullŭng Isl., Hamnam, Anmyŏndo, Kangwŏn, Kyŏnggi, Western Sea, P'yŏngnam, Kyŏngnam in Korea; Wakayama Prefecture, Jogashima, Sagami Bay, Honshu, Yokohama, Shikoku, Kyushu, Southern Hokkaido in Japan; Eastern China Sea, Yellow Sea, Hainan in China; Taiwan; Hong Kong; Indonesia; Southeast Asia.

**Habitat.** Rocks and submerged timbers; from intertidal zone to 20 m deep.

Genus *Monia* Gray, 1850 점잠쟁이속 (신칭)

### 30. *Monia macroschisma* (Deshayes, 1839) 두점잠쟁이

*Monia macroschisma*: Lee, 1956, p. 91; Kira, 1975, p. 131, pl. 47, fig. 9; Habe, 1977, p. 98, pl. 18, fig. 9; Okutani & Habe, 1990, pp. 100, 242; Habe & Ito, 1991, p. 125, pl. 42, figs. 5, 6; Kira, 1992, p. 118, pl. 46, fig. 9; Higo & Goto, 1993, p. 585; Kwon *et al.*, 1993, pp. 110, 354, figs. 74-2-1, 2.

*Monia macroschisma* (sic): Kang *et al.*, 1971, p. 74.

**Type locality.** Kamchatka in Russian Repub.

**Material examined.** 1 ind. (left valve), T'onggumi, 11 Jul. 1989; 1 ind., Taep'ungch'wi, 15 Jul. 1989; 1 ind. (left valve), T'onggumi, 26 Nov. 1991; 2 inds, Kwanŭmdo, 29 Nov. 1991; 1 ind., T'onggumi, 8 Aug. 1992; 1 ind., Sŏmmok, 10 Aug. 1992.

**Distribution.** Ullŭng Isl., Chumunjin in Korea; Hokkaido, Tohoku, Honshu in Japan; Bering Sea, Kuriles in Russian Repub.; Alaska in America; Canada.

**Habitat.** Rocks; from tide marks to 40 m deep.

Superfamily Ostreoidae Rafinesque, 1815 굴상과

Family Ostreidae Rafinesque, 1815 굴과

Genus *Crassostrea* Sacco, 1897 큰굴속 (신칭)

**31. *Crassostrea gigas* (Thunberg, 1793) 굴**

*Ostrea gigas* Thunberg, 1793, p. 140 (cited from Kuroda *et al.*, 1971); Lischke, 1869, p. 174; Lischke, 1871, p. 160; Lischke, 1874, p. 114; Dunker, 1882, p. 249; Kamita & Sato, 1941, p. 2.

*Ostrea talienwhanensis* Crosse, 1862, p. 149, pl. 6, fig. 6 (cited from Habe, 1981).

*Ostrea* (*Crassostrea*) *gigas*: Kuroda, 1931, p. 55, fig. 56; Shiba, 1934, p. 10; Lee, 1956, p. 92; Kang *et al.*, 1971, p. 74.

*Crassostrea gigas*: Kuroda *et al.*, 1971, p. 596 (in Japanese), p. 382 (in English), pl. 86, fig. 1; Kim, 1973, p. 430; Kira, 1975, p. 144, pl. 52, figs. 3, 8; Habe, 1977, p. 108, pl. 20, fig. 6; Habe, 1981, p. 82; Okada, 1981, p. 246; Inaba, 1982, p. 43; Kim & Kwon, 1983, p. 324; Lee *et al.*, 1985, p. 97; Kim & Kim, 1986, p. 322; Kim & Shin, 1986, p. 35; Matsukuma, 1988, p. 407; Yoo, 1988, pp. 120, 121, pl. 26, figs. 10, 11; Okutani & Habe, 1990, pp. 103, 264; Habe & Ito, 1991, p. 126, pl. 42, figs. 7, 8; Kira, 1992, p. 127, pl. 51, figs. 3, 8; Bernard, 1993, p. 46; Kwon *et al.*, 1993, pp. 111, 112, 356, figs. 75-4-1, 2, 3.

**Type locality.** Japan.

**Material examined.** 4 inds., T'onggumi, 12 Jul. 1989; 1 ind., Naesujön, 13 Jul. 1989; 3 inds., Hyölam, 14 Jul. 1989; 6 inds., Taep'ungch'wi, 15 Jul. 1989; 1 ind., Sa-dong, 17 Jul. 1989; 6 inds., T'onggumi, 25 Nov. 1991; 9 inds., T'onggumi, 28 Nov. 1991; 1 ind., Naesujön, 7 Aug. 1992; 1 ind., T'aeha, 10 Aug. 1992; 1 ind., Sömmok, 10 Aug. 1992.

**Distribution.** Ullüng Isl., Hamnam, Kangwön, Kyöngnam, Kyönggi, Western Sea, Tolsando, Taesambudo, Anmyöndo, Ch'ujado, Sangbaekdo, Taech'öngdo, Inch'ön, Chönnam in Korea; Wakayama Prefecture, Hokkaido, Honshu, Shikoku, Kyushu, Yokohama, Japan Sea, Nagasaki, Sagami Bay in Japan; China; Taiwan; Kuriles, Maritime Bay, Kamchatka, Sakhalin in Russian Repub.; Southeast Asia; Western Pacific Region.

**Habitat.** Rocks; from tide marks to 5 m deep.

**32. *Crassostrea nippona* (Seki, 1934) 태생굴**

*Ostrea nippona* Seki, 1934, p. 276, figs. 1-15.

*Ostrea* (*Crassostrea*) *nippona*: Lee, 1956, p. 92.

*Crassostrea nippona*: Kira, 1975, p. 144, pl. 52, fig. 5; Habe, 1977, p. 108; Habe, 1981, p. 83; Okada, 1981, p. 245; Inaba, 1982, p. 43; Okutani & Habe, 1990 pp. 103, 179; Kira, 1992, p. 127, pl. 51, fig. 5; Bernard *et al.*, 1993, p. 46; Higo & Goto, 1993, p. 587.

**Type locality:** Seto Inland in Japan.

**Material examined.** 3 inds., Hyölam, 14 Jul. 1989; 8 inds., Taep'ungch'wi, 15 Jul. 1989; 5 inds., T'onggumi, 8 Aug. 1992; 2 inds., Namyang, 9 Aug. 1992.

**Distribution.** Ullüng Isl., Kangwön, Taehüksando, Ch'ujado, Kömundo, T'ongyöng, Pusan in Korea; Seto Inland Sea, Honshu to Kyushu, Mutsu Bay in Japan; Yellow Sea in China.

**Habitat.** Rocks; from subtidal zone to 20 m deep.

**33. *Crassostrea echinata* (Quoy & Gaimard, 1836) 가시굴**

*Ostrea echinata* Quoy & Gaimard, 1836, p. 455, pl. 76, figs. 13, 14 (cited from Habe, 1981); Kamita & Sato, 1941, p. 2.

*Ostrea spinosa* Deshayes, 1836, p. 237 (cited from Habe, 1981); Sowerby, 1871, p. 79.

*Ostrea (Lopha) echinata*: Kuroda, 1930c, p. 51; Shiba, 1934, p. 10.

*Saxostrea echinata*: Lee, 1956, p. 91; Habe, 1975, p. 176, pl. 54, fig. 13; Kuroda *et al.*, 1971, p. 594 (in Japanese), p. 380 (in English), pl. 85, figs. 6, 7; Kang *et al.*, 1971, p. 74; Okada, 1981, p. 245; Habe, 1982, p. 120, pl. 54, fig. 13; Yoo, 1988, p. 120, pl. 26, fig. 9; Habe & Ito, 1991, p. 126, pl. 42, fig. 9.

*Saccostrea echinata*: Habe, 1977, p. 109, pl. 20, figs. 8, 9; Habe, 1981, p. 83.

*Crassostrea echinata*: Higo & Goto, 1993, p. 587.

**Type locality.** Amboina in Indonesia.

**Material examined.** 1 ind. (right valve), T'onggumi, 12 Jul. 1989.

**Distribution.** Ullŭng Isl., T'ongyŏng, Yŏsu, Yokchi, Pijin, Inch'ŏn in Korea; Wakayama Prefecture, Amami, Mutsu Bay, Okinawa, Honshu, Seto Inland Sea, Hokkaido to Kyushu in Japan; Indo-Western Pacific Region.

**Habitat.** Rocks; tide marks.

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# 울릉도 해산 익형아강(연체동물문: 이매패강)

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## 요 약

1989년 6월부터 1992년 8월까지 울릉도의 13개 지점에서 채집된 해산 이매패류를 조사한 결과 익형아강(Pteriomorpha)에 속하는 9과 33종(아종)이 채집되었다. 이들은 모두 울릉도 미기록 종이며, 이들 중 *Modiolus*(*Modiolus*) *comptus* Sowerby, 1915, *Gregariella coralliophaga*(Gmelin, 1791), *Musculus* (*Musculus*) *laevigatus*(Gray, 1824), *Chlamys*(*Coralichlamys*) *jousseumei* Bavay, 1904, *Spondylus*(*Spondylus*) *varius* Sowerby, 1829 등 5종은 한국 미기록종으로 밝혀졌기에 이들을 재기재 하였다.

## Plate 1

**1, 2**, *Modiolus* (*Modiolus*) *comptus* Sowerby, 1915 (right valve, Hyölam, 14 Jul. 1989, x9); **3, 4**, *Gregariella coralliophaga* (Gmelin, 1791)(left valve, Taep'ungch'wi, 15 Jul. 1989, x3.7); **5**, *Chlamys* (*Coralichlamys*) *jousseumei* Bavay, 1904 (left valve, T'onggumi, 25 Nov. 1991, x4.2); **6**, same (right valve); **7**, *Musculus* (*Musculus*) *laevigatus* (Gray, 1824) (right valve, Kadubong, 28 Nov. 1991, x5.5); **8**, *Spondylus* (*Spondylus*) *varius* Sowerby, 1829 (To-dong, 27 Nov. 1991, x0.3).

PLATE

